

# TEST REPORT

Report No.: **SZ1220724-33383E**

Date: July 29, 2022

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**Shenzhen Xin Yuan Electronic Technology Co, Ltd.**

**401 4F Bldg.building B. No.5, 1st Rd Bantianshangxue Technology Park, Bantian St Longgang Dist., Shenzhen, Guangdong China**

Report on the submitted samples said to be:

Sample Description: T-PicoC3  
Style/Item No.: T-PicoC3  
Brand: LILYGO  
Sample Receiving Date: July 24,2022  
Testing Period: July 24,2022 - July 27,2022  
Result: **Pass**

Signed for and on behalf of

BACL

*Queenie Lee*

Checked by: \_\_\_\_\_  
Queenie Lee

*Lance Lee*

Approved by: \_\_\_\_\_  
Lance Lee



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Summary of Test Result:

**TEST REQUEST**

**CONCLUSION**

A RoHS Directive 2011/65/EU and amendment directives (EU) 2015/863 on Lead,Cadmium, Mercury, Hexavalent Chromium, PBBs & PBDEs, Phthalates(DBP, BBP,DEHP, DIBP) content

A.1 XRF screening test

Pass

A.2 Wet Chemical Testing

A.2.1 PBBs & PBDEs content

Pass

A.3 Phthalates(DBP, BBP, DEHP, DIBP)content

Pass

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**A RoHS Directive 2011/65/EU and amendment directives (EU) 2015/863 on Lead, Cadmium, Mercury, Hexavalent Chromium, PBBs & PBDEs, Phthalates (DBP, BBP, DEHP, DIBP) content**

**A.1 XRF screening test**

Test method: IEC 62321-3-1:2013

Seq No.	Tested Part(s)	Result				
		Pb	Cd	Hg	Cr	Br
(1)	Black plastic(shell, T-PicoC3)	BL	BL	BL	BL	BL
(2)	Clear laminated black printed white paper with adhesive(label, shell, T-PicoC3)	BL	BL	BL	BL	BL
(3)	Silvery metal(contact plate, USB socket, PCB, T-PicoC3)	BL	BL	BL	BL	---
(4)	Silvery metal(contact pin, USB socket, PCB, T-PicoC3)	BL	BL	BL	BL	---
(5)	Black plastic(insulator, USB socket, PCB, T-PicoC3)	BL	BL	BL	BL	BL
(6)	Beige plastic(shell, socket, PCB, T-PicoC3)	BL	BL	BL	BL	BL
(7)	Silvery metal(pin, socket, PCB, T-PicoC3)	BL	BL	BL	BL	---
(8)	Silvery metal(socket holder, PCB, T-PicoC3)	BL	BL	BL	BL	---
(9)	Beige plastic(button, switch "106", PCB, T-PicoC3)	BL	BL	BL	BL	BL
(10)	Beige plastic(base, switch "106", PCB, T-PicoC3)	BL	BL	BL	BL	BL
(11)	Silvery metal(cover, switch "106", PCB, T-PicoC3)	BL	BL	BL	BL	---
(12)	Silvery metal(spring leaf, switch "106", PCB, T-PicoC3)	BL	BL	BL	BL	---
(13)	Silvery metal(pin, switch "106", PCB, T-PicoC3)	BL	BL	BL	BL	---
(14)	Black plastic(button, switch "run", PCB, T-PicoC3)	BL	BL	BL	BL	BL
(15)	Beige plastic(base, switch "run", PCB, T-PicoC3)	BL	BL	BL	BL	BL
(16)	Silvery metal(cover, switch "run", PCB, T-PicoC3)	BL	BL	BL	BL	---
(17)	Silvery metal(spring leaf, switch "run", PCB, T-PicoC3)	BL	BL	BL	BL	---
(18)	Silvery metal(pin, switch "B001", PCB, T-PicoC3)	BL	BL	BL	BL	---
(19)	Black plastic(button, switch "B001", PCB, T-PicoC3)	BL	BL	BL	BL	BL
(20)	Black plastic(base, switch "B001", PCB, T-PicoC3)	BL	BL	BL	BL	BL
(21)	Silvery metal(cover, switch "B001", PCB, T-PicoC3)	BL	BL	BL	BL	---
(22)	Silvery metal(spring leaf, switch "B001", PCB, T-PicoC3)	BL	BL	BL	BL	---
(23)	Silvery metal(pin, switch "B001", PCB, T-PicoC3)	BL	BL	BL	BL	---
(24)	Golden metal(contact plate, antenna socket, PCB, T-PicoC3)	BL	BL	BL	BL	---
(25)	Golden metal(contact pin, antenna socket, PCB, T-PicoC3)	BL	BL	BL	BL	---
(26)	White plastic(base, antenna socket, PCB, T-PicoC3)	BL	BL	BL	BL	BL
(27)	Black body(SMD resistor, PCB, T-PicoC3)	BL	BL	BL	BL	BL

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Seq No.	Tested Part(s)	Result				
		Pb	Cd	Hg	Cr	Br
(28)	Brown body(SMD capacitor, PCB, T-PicoC3)	BL	BL	BL	BL	BL
(29)	White body(SMD capacitor, PCB, T-PicoC3)	BL	BL	BL	BL	BL
(30)	Black body(SMD diode, PCB, T-PicoC3)	BL	BL	BL	BL	BL
(31)	Black body(SMD triode, PCB, T-PicoC3)	BL	BL	BL	BL	BL
(32)	Black body(small IC, PCB, T-PicoC3)	BL	BL	BL	BL	BL
(33)	Black body(medium IC, PCB, T-PicoC3)	BL	BL	BL	BL	BL
(34)	Black body(big IC, PCB, T-PicoC3)	BL	BL	BL	BL	BL
(35)	Coppery body(crystal oscillator, PCB, T-PicoC3)	BL	BL	BL	BL	BL
(36)	Transparent/green body(SMD LED, PCB, T-PicoC3)	BL	BL	BL	BL	BL
(37)	Silvery solder(PCB, T-PicoC3)	BL	BL	BL	BL	---
(38)*	White printed black coated beige plastic with coppery metal(PCB, T-PicoC3)	BL	BL	BL	BL	X
(39)	Black EVA with adhesive(pad, PCB, T-PicoC3)	BL	BL	BL	BL	BL
(40)	White printed black coated golden FPC(FPC, monitor, T-PicoC3)	BL	BL	BL	BL	BL
(41)	Transparent golden plastic with adhesive(tape, FPC, monitor, T-PicoC3)	BL	BL	BL	BL	BL
(42)	Silvery solder(FPC, monitor, T-PicoC3)	BL	BL	BL	BL	---
(43)	Silvery body(IC, FPC, monitor, T-PicoC3)	BL	BL	BL	BL	BL
(44)	White body(SMD LED, FPC, monitor, T-PicoC3)	BL	BL	BL	BL	BL
(45)	Blue dry glue(FPC, monitor, T-PicoC3)	BL	BL	BL	BL	BL
(46)	Black printed silvery metal(backlight cover, monitor, T-PicoC3)	BL	BL	BL	BL	---
(47)	Translucent plastic(film, monitor, T-PicoC3)	BL	BL	BL	BL	BL
(48)	White plastic(reflector, monitor, T-PicoC3)	BL	BL	BL	BL	BL
(49)	Black plastic with adhesive(shading plate, monitor, T-PicoC3)	BL	BL	BL	BL	BL
(50)	Silvery plated transparent plastic(light guide plate, monitor, T-PicoC3)	BL	BL	BL	BL	BL
(51)	Black plastic(frame, monitor, T-PicoC3)	BL	BL	BL	BL	BL
(52)	Grey plastic(conductive strip, monitor, T-PicoC3)	BL	BL	BL	BL	BL
(53)	Transparent glass(screen, monitor, T-PicoC3)	BL	BL	BL	BL	BL
(54)	Transparent grey glass(screen, monitor, T-PicoC3)	BL	BL	BL	BL	BL
(55)	Transparent plastic(box, T-PicoC3)	BL	BL	BL	BL	BL
(56)	Grey foam(inner, box, T-PicoC3)	BL	BL	BL	BL	BL

Note:

--- = Not Applicable.

\* = Screening by XRF and detected by chemical method. The test result of chemical method please refer to next pages.

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Remark:

i Result were obtained by XRF for primary screening, and further chemical testing by ICP (for Cd, Pb, Hg), UV-Vis (for Cr(VI)) and GC-MS (for PBBs, PBDEs) are recommended to be performed, if the concentration exceeds the below warning value according to IEC62321-3-1:2013.

Element	Unit	Polymers	Metal	Composite Material
Cd	mg/kg	BL≤70-3σ<X <130+3σ≤OL	BL≤70-3σ<X <130+3σ≤OL	BL≤50-3σ<X <150+3σ≤OL
Pb	mg/kg	BL≤700-3σ<X <1300+3σ≤OL	BL≤700-3σ<X <1300+3σ≤OL	BL≤500-3σ<X <1500+3σ≤OL
Hg	mg/kg	BL≤700-3σ<X <1300+3σ≤OL	BL≤700-3σ<X <1300+3σ≤OL	BL≤500-3σ<X <1500+3σ≤OL
Cr	mg/kg	BL≤700-3σ<X	BL≤700-3σ<X	BL≤500-3σ<X
Br	mg/kg	BL≤300-3σ<X	--	BL≤250-3σ<X

Note:

BL = Below Limit

OL = Over Limit

IN / X = Inconclusive (questionable, need further chemical analysis)

ii The XRF screening test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition.

iii The maximum permissible limit is quoted from the RoHS directive 2011/65/EU:

RoHS Restricted Substances	Maximum Concentration Value (mg/kg) (by weight in homogenous materials)
Cadmium (Cd)	100
Lead (Pb)	1000
Mercury (Hg)	1000
Hexavalent Chromium (Cr(VI))	1000
Polybrominated biphenyls (PBBs)	1000
Polybrominated diphenylethers (PBDEs)	1000

Disclaimers:

This XRF Screening report is for reference purposes only. The applicant shall make its/his/her own judgment as to whether the information provided in this XRF screening report is sufficient for its/his/her purposes.

The result shown in this XRF screening report will differ based on various factors, including but not limited to, the sample size, thickness, area, surface flatness, equipment parameters and matrix effect (e.g. plastic, rubber, metal, glass, ceramic etc.). Further wet chemical pre-treatment with relevant chemical equipment analysis are required to obtain quantitative data.

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**A.2 Wet Chemical Testing**

**A.2.1 PBBs & PBDEs content**

Test method: IEC 62321-6:2015

Item	Unit	MDL	Result	Limit
			(38)	
Monobromobiphenyl (MonoBB)	mg/kg	5	N.D.	-
Dibromobiphenyl(DiBB)	mg/kg	5	N.D.	-
Tribromobiphenyl(TriBB)	mg/kg	5	N.D.	-
Tetrabromobiphenyl(TetraBB)	mg/kg	5	N.D.	-
Pentabromobiphenyl(PentaBB)	mg/kg	5	N.D.	-
Hexabromobiphenyl(HexaBB)	mg/kg	5	N.D.	-
Heptabromobiphenyl (HeptaBB)	mg/kg	5	N.D.	-
Octabromobiphenyl(OctaBB)	mg/kg	5	N.D.	-
Nonabromobiphenyl(NonaBB)	mg/kg	5	N.D.	-
Decabromobiphenyl(DecaBB)	mg/kg	5	N.D.	-
Monobromodiphenyl ether (MonoBDE)	mg/kg	5	N.D.	-
Dibromodiphenyl ether (DiBDE)	mg/kg	5	N.D.	-
Tribromodiphenyl ether (TriBDE)	mg/kg	5	N.D.	-
Tetrabromodiphenyl ether (TetraBDE)	mg/kg	5	N.D.	-
Pentabromodiphenyl ether (PentaBDE)	mg/kg	5	N.D.	-
Hexabromodiphenyl ether (HexaBDE)	mg/kg	5	N.D.	-
Heptabromodiphenyl ether (HeptaBDE)	mg/kg	5	N.D.	-
Octabromodiphenyl ether (OctaBDE)	mg/kg	5	N.D.	-
Nonabromodiphenyl ether (NonaBDE)	mg/kg	5	N.D.	-
Decabromodiphenyl ether (DecaBDE)	mg/kg	5	N.D.	-

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Item	Unit	MDL	Result		Limit
			(38)		
sum of MonoBDE,DiBDE,TriBDE,TetraBDE,PentaBDE,HexaBDE,HeptaBDE,OctaBDE,NonaBDE,DecaBDE	mg/kg	-	/		1000
sum of MonoBB,DiBB,TriBB,TetraBB,PentaBB,HexaBB,HeptaBB,OctaBB,NonaBB,DecaBB	mg/kg	-	/		1000
<b>Conclusion</b>	/	/	<b>Pass</b>		/

### A.3 Phthalates(DBP, BBP, DEHP, DIBP)content

Test method: IEC 62321-8:2017

Item	Unit	MDL	Result						Limit
			(1)	(2)+(39)+(41)	(5)+(6)+(9)	(10)+(14)+(15)	(19)+(20)+(45)	(26)+(52)	
Dibutyl Phthalate(DBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Benzyl Butyl Phthalate(BBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Bis-(2-ethylhexyl) Phthalate (DEHP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1000
Diisobutyl phthalate(DIBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1000
<b>Conclusion</b>	/	/	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>	/

Item	Unit	MDL	Result				Limit
			(30)+(31)+(32)	(33)+(34)+(35)	(36)+(43)+(44)	(38)	
Dibutyl Phthalate(DBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	1000
Benzyl Butyl Phthalate(BBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	1000
Bis-(2-ethylhexyl) Phthalate (DEHP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	1000
Diisobutyl phthalate(DIBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	1000
<b>Conclusion</b>	/	/	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>	/

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Item	Unit	MDL	Result				Limit
			(40)	(47)+(48)+(49)	(50)+(51)	(55)+(56)	
Dibutyl Phthalate(DBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	1000
Benzyl Butyl Phthalate(BBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	1000
Bis-(2-ethylhexyl) Phthalate (DEHP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	1000
Diisobutyl phthalate(DIBP)	mg/kg	30	N.D.	N.D.	N.D.	N.D.	1000
<b>Conclusion</b>	/	/	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>	/

Note:

- N.D.= Not Detected or less than MDL
- MDL = Method Detection Limit
- "+" = Composite testing.
- The Result less than MDL are not taken into account while calculating the sum contents.

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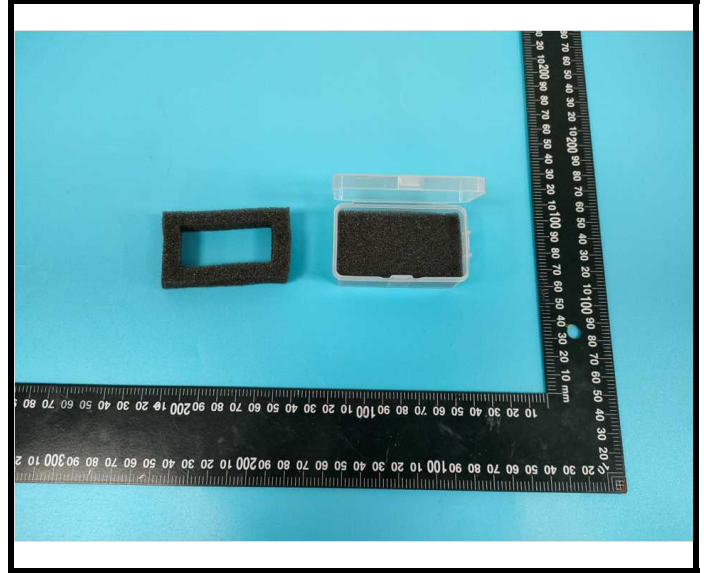
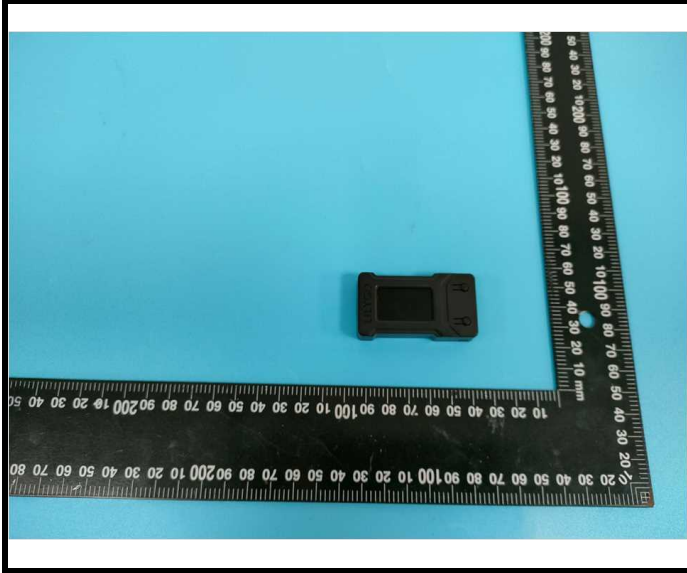
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Photograph of Sample



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Statement:

- 1.This report cannot be reproduced except in full, without prior written approval of the Company.
- 2.Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.
- 3.This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.
- 4.Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.
- 5.The information which provided by the applicant, such as sample description, sample name, material component, style/item No. , P.O. No. , manufacturer, age phase, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report.
- 6.The test samples were in good condition before testing.

\*\*\* End of Report \*\*\*